

Comparison Of Abbreviated Injury Scale and International Classification of Diseases in Severe Trauma Patients

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PURPOSE

This study assesses the current coding system in order to explore the necessity of new coding systems for severe trauma patients.

METHODS

We investigated two different coding systems: Abbreviated Injury Scale (AIS)¹ and International Classification of Diseases, 9th Edition, Clinical Modification (ICD-9-CM). Based on our previous report², high risk patients were defined as having: (1) pH = 7.2 at initial intensive care unit admission or (2) pH between 7.2 and 7.33 and APTT = 80 seconds at initial intensive care unit admission. The relationships between clinical risk and each coding system were evaluated. The differences between ICD-9-CM and AIS codes were evaluated for liver injury patients.

RESULTS

The average injury severity score (ISS)³, based on AIS score, was 18.8 per patient. There was no significant difference in ISS score between high and low risk patients. Two out of 16 patients were classified with a coagulation defect and no patient was assigned the severe acidosis code in ICD-9-CM. A comparison of ICD-9-CM and AIS coding systems for patients with liver injury is shown (Table). The two coding systems were highly inconsistent.

CONCLUSIONS

This study demonstrated inconsistencies between two current coding systems for patients with severe trauma. Objective clinical risk factors might be useful to reduce inter-coding disagreements and to enhance the utility of clinical decision making.

Table. Comparison of ICD-9-CM and AIS coding in individual cases

ICD-9-CM		Assigned AIS Code			
Code	Description				
864.00	Liver injury, without open wound	541824.3			
864.04	Liver injury, with major laceration, without open wound	541828.5			
864.10	Liver injury, with open wound	541826.4			
864.14	Liver injury, with major laceration, with open wound	541820.2	541828.5		
864.15	Liver injury, with laceration, with open wound	541822.2	541824.3	541826.4	541828.5
864.19	Liver injury, with open wound, other	541826.4			

REFERENCES

1. Association for the Advancement of Automotive Medicine. The abbreviated injury scale, AAAM, 1990.
2. Demsar J, Zupan B, Aoki N, et al. Feature mining and predictive model construction from severe trauma patient's data (in press). *Int J Med Inform.*
3. Baker SP, O'Neill B, Haddon W, Jr., et al. The injury severity score. *J Trauma* 1974; 14:187-96.